AM-FM STEREO RECEIVER

KVR-A90R
KVR-A70R
KR-A70

KENWOOD

INSTRUCTION MANUAL

For your records

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your dealer for information or service on this product.

Model _____ Serial Number_____

Unpacking

Unpack the unit carefully and make sure that all accessories are put aside so they will not be lost.

Examine the unit for any possibility of shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

We recommend that you retain the original carton and packing materials for use should you transport or ship the unit in the future.

Before operation

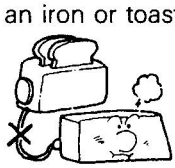
Safety precautions

Never remove the case. If the internal parts are touched accidentally, a serious electric shock might occur.

Never touch internal parts.

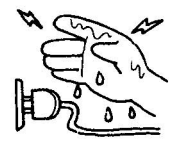
If a metal object, such as a hair pin or a needle, comes into contact with the power socket on the rear panel, a dangerous electric shock may result. For families with children, never permit children to put anything, especially metal, inside this unit.

Do not connect other audio equipment with a power consumption larger than that specified to the AC outlet on the rear panel. Never connect other electrical appliances, such as an iron or toaster.



Never connect other electrical appliances.

Touching the power plug when your hands are wet may result in a serious electric shock.



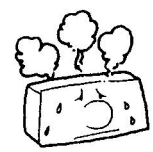
Never touch with wet hands.

Never pull, bend or extend the power cord. This could damage the power cord, resulting in a broken cord or short-circuit.

Never pull or stretch the cord.

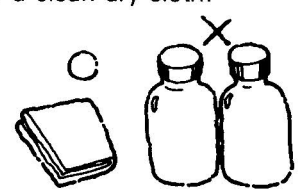
In case of abnormal smell

If an abnormal smell or smoke is detected, immediately turn the power OFF and pull out the power cord. Contact your dealer or nearest service station.



Cleaning

Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzine, etc. to clean the cabinet. Use a silicone cloth or a clean dry cloth.



Silicone cloth Thinner Benzine

Installation precautions

a) Avoid locations subject to direct sunlight.
b) Avoid high or low temperature extremes.
c) Keep the unit away from heat radiating sources.
d) Choose a location that is relatively free of vibration or excessive dust.
e) Make sure power is off before making any system connections.

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Before applying power

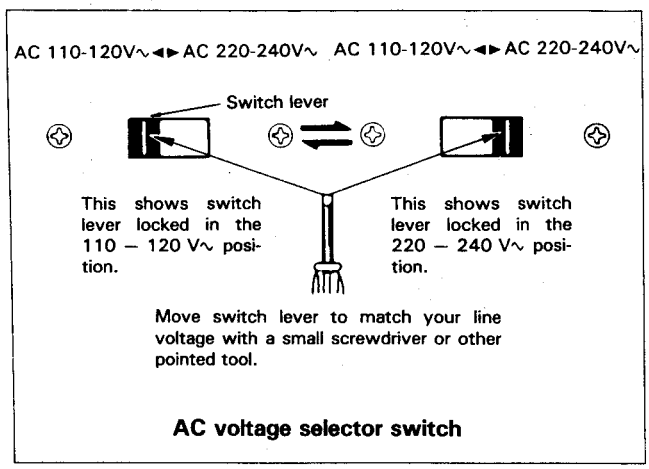
Important!

U.S.A., Canada, and Europe

Units shipped to the U.S.A. and Canada are designed for operation on 120 volts AC only. Units shipped to European countries are designed for operation on 220 volts AC only. These units are not equipped with an AC voltage selector switch and the discussion of such a switch that follows should be disregarded.

All other countries

Units shipped to countries other than the U.S.A., Canada, and Europe are equipped with an AC voltage selector switch on the bottom plate. Refer to the following paragraph for the proper setting of this switch.


AC 110-120V~◄►AC 220-240V~
AC 110-120V~◄►AC 220-240V~
Switch lever
This shows switch lever locked in the 110 – 120 V~ position.
This shows switch lever locked in the 220 – 240 V~ position.
Move switch lever to match your line voltage with a small screwdriver or other pointed tool.

AC voltage selector switch

AC voltage selection

This unit operates on 110 - 120 volts or 220 - 240 volts AC. The AC voltage selector switch on the bottom plate is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your line voltage. If not, it must be set to your voltage in accordance with the following direction.

Note:

Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC voltage selector switch.

Safety precaution for AC plug (For Canada)

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

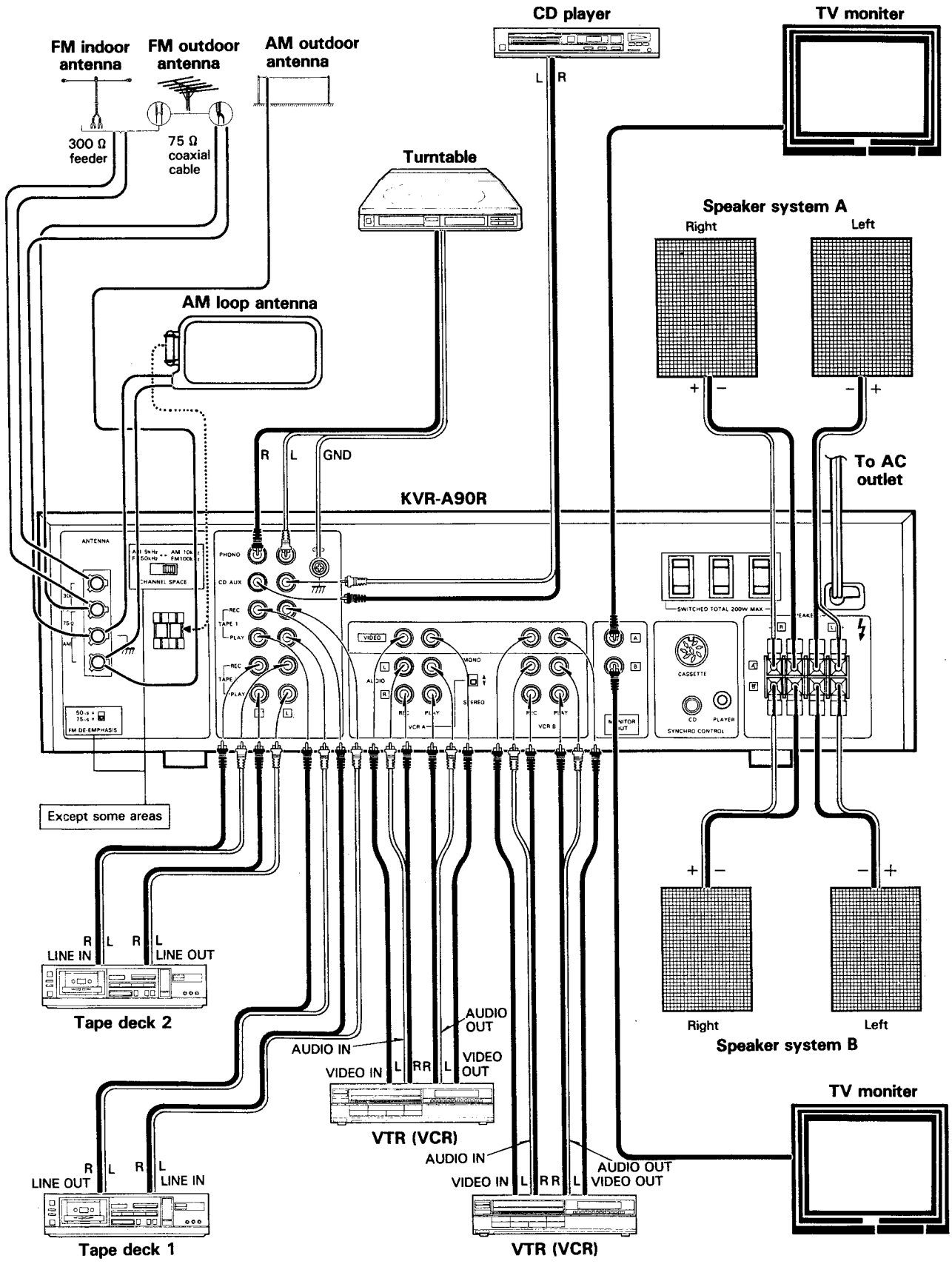
WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Rear panel safety precautions

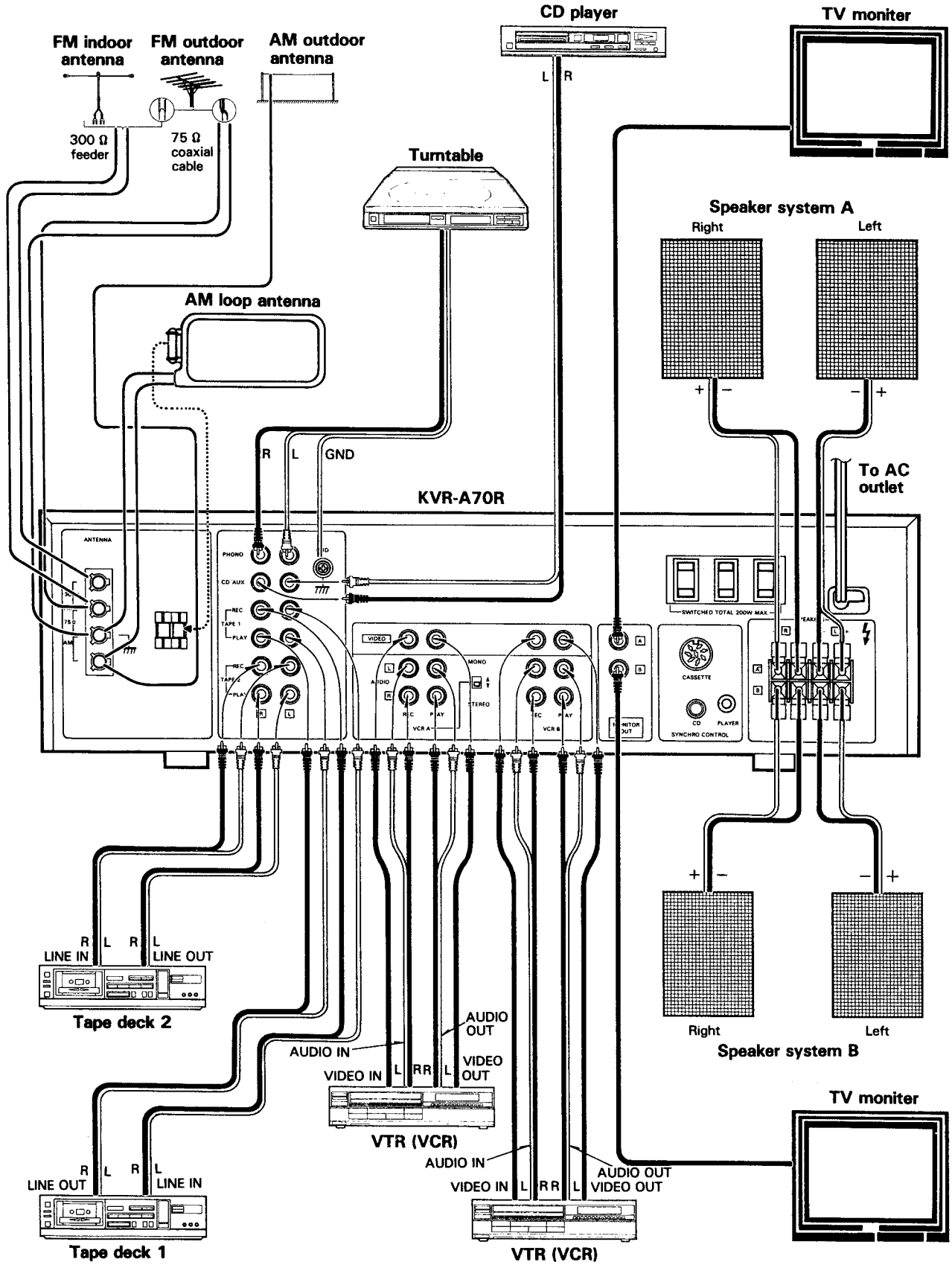
CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

System connections

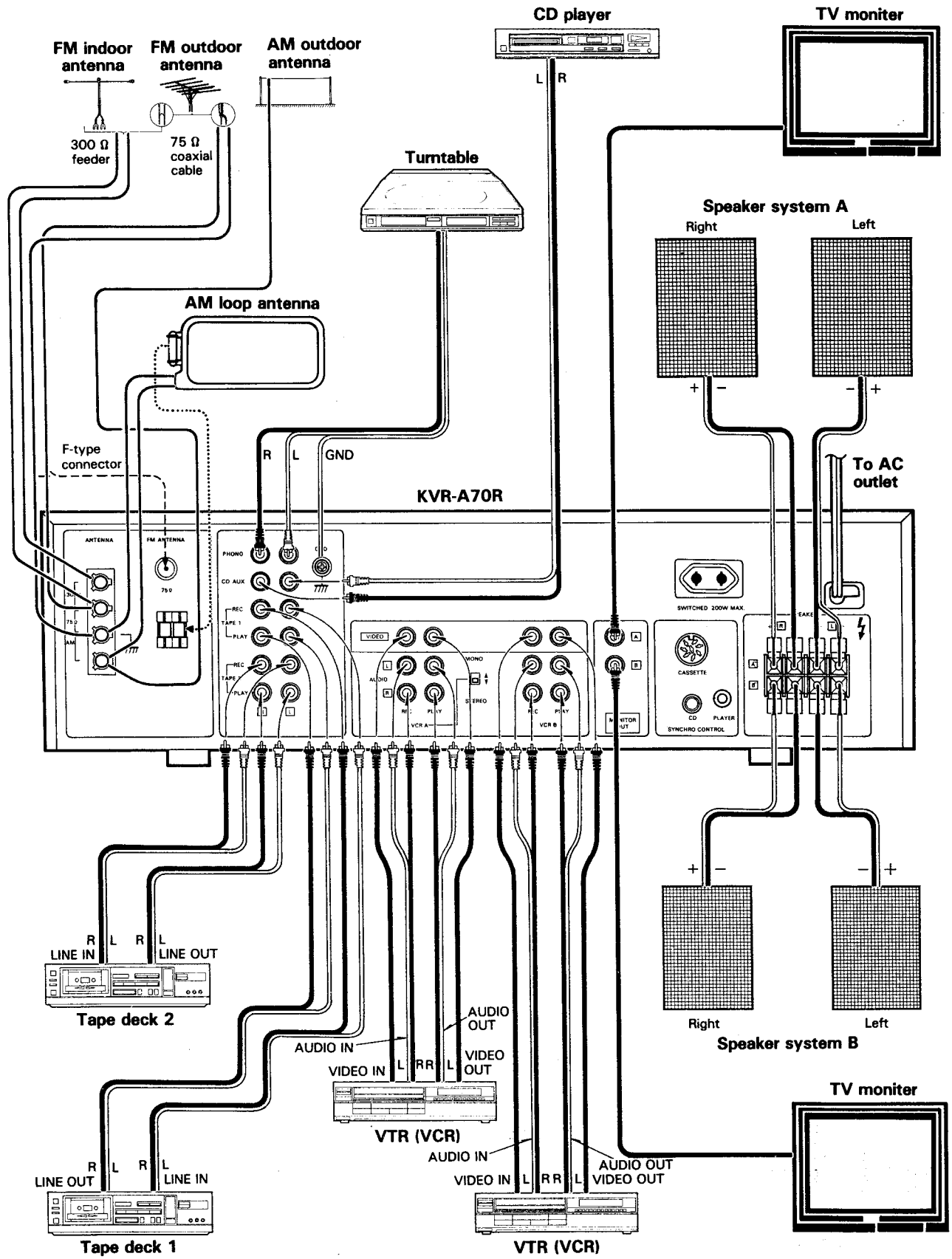
— KVR-A90R system connections —



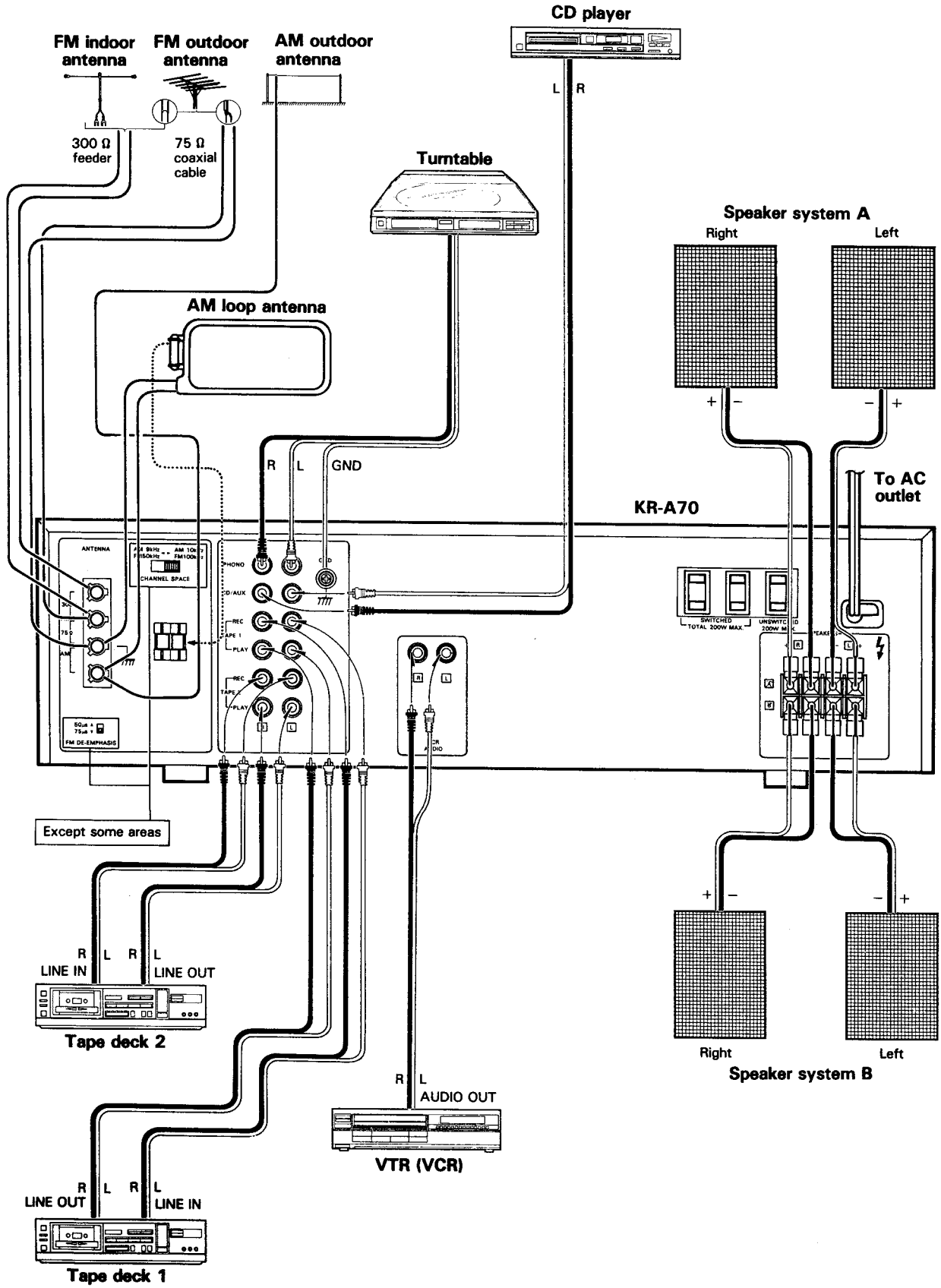
— KVR-A70R system connections (USA and Canada model) —



— KVR-A70R system connections (European model) —



— KR-A70 system connections —



Speakers

This unit has two pairs of speaker terminals, SPEAKERS A and SPEAKERS B.

Connecting one speaker system

Connect speakers rated at 4 ohms or more to the SPEAKERS A terminals.

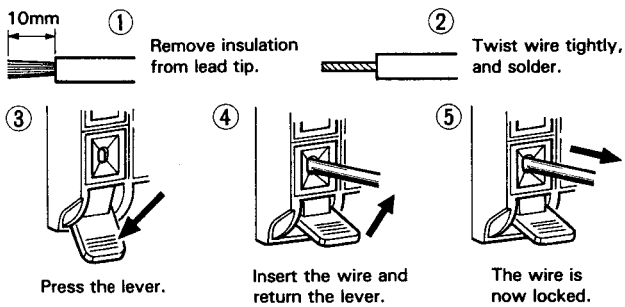
Connecting two speaker systems

To connect an additional pair of speakers, use the B terminals. In this case, each speaker must be rated at 8 ohms or more.

Connection with speaker cords

1. Connect the left speaker to the [L] SPEAKERS terminals and the right speaker to the [R] SPEAKERS terminals.
2. Be careful that wires do not contact adjacent terminals.
3. Be sure to connect the (+) terminal of the speaker to the (+) terminal of the unit.
   Never short the (+) and (−) terminals.

Erroneous connection of speakers may result in poor imaging or unnatural sound.



Speaker lead connection

Turntable

The PHONO jacks of the unit can accept a turntable with an MM type phono-cartridge (The KVR-A90R can be connected to either type of turntable; one using MM cartridge or one using MC cartridge).

Your stereo turntable has a pair of audio cables that is terminated with phono plugs. Plug the left channel plug into the [L] and the right channel plug into the [R] PHONO jacks.

If the turntable has a ground wire, connect it to the unit's GND terminal to avoid hum.

CD/AUX

To these jacks, high-level signal sources such as, CD player, tuner, extra tape decks, TV, VTR sound outputs, etc. can be connected.

Ground

For maximum safety and minimum interference connect the GND terminal to a good earth ground if practicable. A good earth ground is a cold water pipe or a metal stake driven into moist earth. However, never use a gas pipe for this purpose.

Tape decks

If only one tape deck is to be connected to the system it is recommended that it be connected to the jacks marked TAPE 2. (If your tape deck is equippied with a 3 head system, the simultaneous monitoring can be possible.)

Tape deck input and output cables are normally terminated with phono plugs.

Playback

Plug the left and right output cables of the tape deck into the [L] and [R] TAPE 2 PLAY jacks.

Record

Plug the left and right input cables of the tape deck into the [L] and [R] TAPE 2 REC jacks.

Second tape deck

Plug the input and output cables from the second tape deck into the REC and PLAY jacks marked TAPE 1.

VCR (VIDEO/AUDIO) jacks (except KR-A70)

Two video recorders can be connected to the VCR A and VCR B jacks.

Connect the unit's VIDEO PLAY jack to the video recorder's video output terminal, the VIDEO REC jack to the video input terminal, the AUDIO PLAY [L] jack to the left audio output terminal, AUDIO PLAY [R] jack to the right audio output terminal, AUDIO REC [L] jack to the left audio input terminal, and the AUDIO REC [R] jack to the right audio input terminal. (Video recorder with monaural audio should be connected to one of the VCR A jacks. After connecting it to the [L] or [R] AUDIO jack of the VCR A jacks, set the MONO/STEREO switch to "MONO".)

MONO/STEREO switch (except KR-A70)

This switch affects only the VCR A jacks. Set the switch according to the stereo or monaural audio output mode of the video recorder connected to the VCR A jacks.

VCR AUDIO jacks (except KVR-A90R and KVR-A70R)

Connect these jacks to the audio output terminals of a video recorder. Connect the VCR AUDIO [L] jack to the left audio output terminal and VCR AUDIO [R] jack to the right audio output terminal. (Never connect these jacks to the video output of the video recorder.)

To these jacks, high-level signal sources such as, CD player, tuner, extra tape decks, TV, VTR sound outputs, etc. can be connected.

MONITOR OUT jacks (except KR-A70)

Two video monitors can be connected to the MONITOR OUT A and MONITOR OUT B jacks. (The video monitors or TVs should be equipped with video input terminals.)

Connect the MONITOR OUT A or B jack to the video input terminal of each video monitor.

SYNCHRO CONTROL terminal (except KR-A70)

When the KD-74F/KD-64F (turntable), KX-74R (tape deck) or DP-840 (CD player) are used in connection with the receiver, they can be operated from the remote control unit of the receiver when their synchro terminals are connected to the SYNCHRO CONTROL terminals. (Ordinary audio cable connections are also required.) For details, refer to the operating instructions for the remote control unit on page 16.

AM antennas

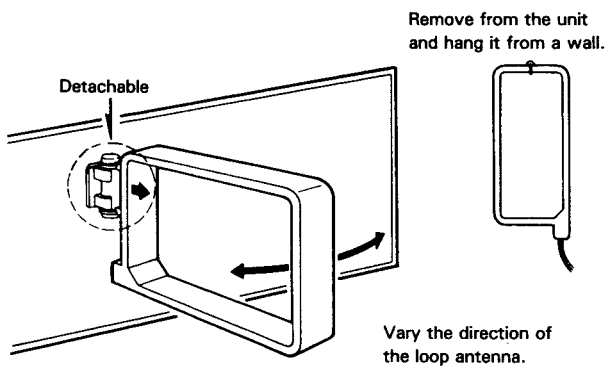
AM loop antenna

Tune in your favorite AM station and position the loop antenna for best reception. Try other stations and find the position that gives best overall reception. When this unit is mounted in a rack or placed on a shelf with insufficient space behind, remove the loop antenna and hang it from a wall in the direction which gives best reception.

If the length of the lead wire is too short, add a lead wire of an appropriate length.

Note:

If beat noise occurs during AM reception, remove the AM loop antenna from the unit.



AM loop antenna setting

AM outdoor antenna

In steel buildings or at a great distance from the transmitter, it may be necessary to install an outside long wire antenna. The end of this wire should be stripped of insulation and connected to the AM terminal. At this time, keep the loop antenna connected.

FM antennas

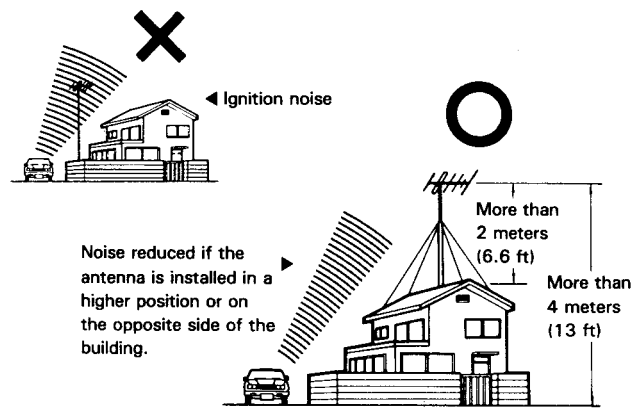
Your unit approaches the thereotical limit in FM sensitivity. However, the performance of your system is determined to a very large extent upon the signal conditions where the antenna is placed. The reason is that FM broadcast signals travel in straight paths. Therefore they can be blocked by natural or man-made obstructions such as mountains, hills, or buildings. At large distances from the transmitter the curvature of the earth acts as a screen between transmitter and receiver.

Consider the signal conditions in planning your installation. If you live in or near an urban area the indoor antenna (supplied) may serve your needs adequately. However, if favorite stations are weak due to natural obstructions, or if you live in a building which is made of steel-reinforced concrete (which acts as a shield) it may be necessary to install a good outdoor antenna.

FM outdoor antenna

Consult with your dealer or service man about the best method of selecting and erecting an outdoor FM antenna.

The choice of lead-in (feeder) wire is also important. The flat ribbon-shaped twin lead performs well electrically, is cheaper and is somewhat easier to handle in routing through windows and around rooms. Coaxial cable is more expensive, does a much better job of minimizing interference, is less prone to the effects of weather and close-by metal objects, and is nearly as good a signal conductor as the ribbon type wire. The latter is particularly true of foam-type coaxial cables. Coaxial cable is somewhat more difficult to install at the point where the cable enters the building. if coaxial cable is selected, make sure the antenna is designed to drive that type of cable.


Ignition noise
More than 2 meters (6.6 ft)
Noise reduced if the antenna is installed in a higher position or on the opposite side of the building.
More than 4 meters (13 ft)

FM outdoor antenna setting

FM indoor antenna

Connect the T-shaped indoor antenna (supplied) to the 300 Ω FM ANTENNA terminals as shown in the system connections diagram. Spread the two arms that form the top of the "T" horizontally and hold them against convenient wall surfaces. Try several locations for best results on your favorite stations. Tape the antenna in place where the best compromise is found between listening results and appearance.

FM DE-EMPHASIS switch (Except some areas)

This switch has been set to the correct position for a given market area. However. check to see that this switch is set correctly before operating your unit. An incorrect setting will adversely affect high-frequency performance.

Europe, Oceania and South Africa..... 50 μs
Other countries ..... 75 μs

AM/FM CHANNEL SPACE switch (Except some areas)

The CHANNEL SPACE switch on the rear panel is set to the correct setting that prevails in the area to which the unit is shipped. However, if the channel space setting is not matched to the area where the unit is to be used; for instance, when you moved from area 1 to area 2 or vice versa, desired reception of AM/FM broadcasts is not expected. In this case, change the CHANNEL SPACE setting in accordance with the area corresponding to the table shown below.

Area	Channel Space Frq.	
1. U.S.A., Canada Hawaii, and Guam	**FM:**	100 kHz
	AM:	10 kHz
2. European countries Far East countries	**FM:**	50 kHz
	AM:	9 kHz

Channel space table

Note:
When changing the setting of the AM/FM CHANNEL SPACE switch, turn the POWER switch OFF and ON.

AC outlets

The AC outlets on the rear panel of the unit may be used to supply power to other components in the system, such as turntables, tape decks, etc. Never connect equipment whose power consumption exceeds the maximum value shown at each outlet.

KVR-A90R/KVR-A70R (U.S.A., and Canadian models)

SWITCHED outlets: This outlet supply power only when the unit is turned on. The maximum total capacity is 200 watts.

KVR-A70R (European model)

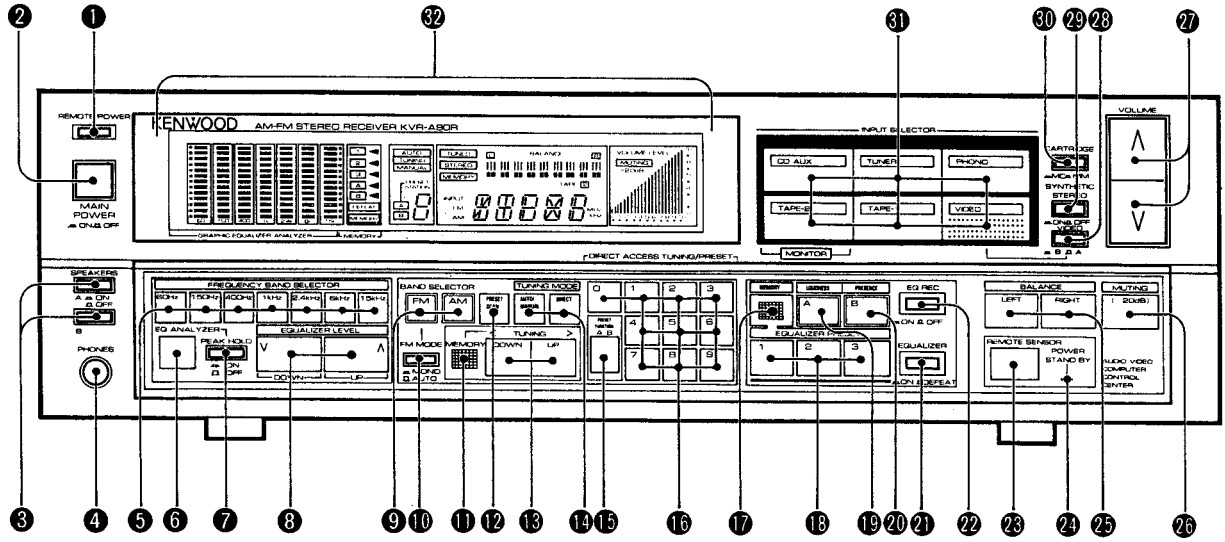
SWITCHED outlet: This outlet supply power only when the unit is turned on. The maximum capacity is 200 watts.

KR-A70

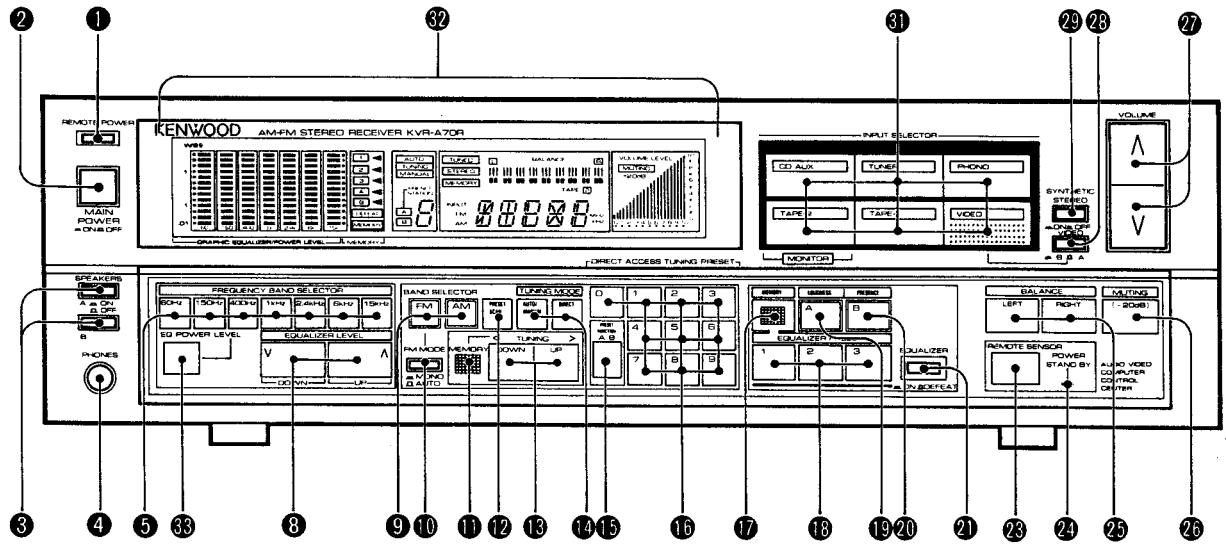
SWITCHED outlets: These outlets supply power only when the unit is turned on. The maximum total capacity (both outlets) is 200 watts.
UNSWITCHED outlet: The outlet provides power when the unit is plugged into an active AC wall outlet, regardless of the setting of the POWER switch. The maximum capacity is 200 watts.

Controls, indicators and connectors

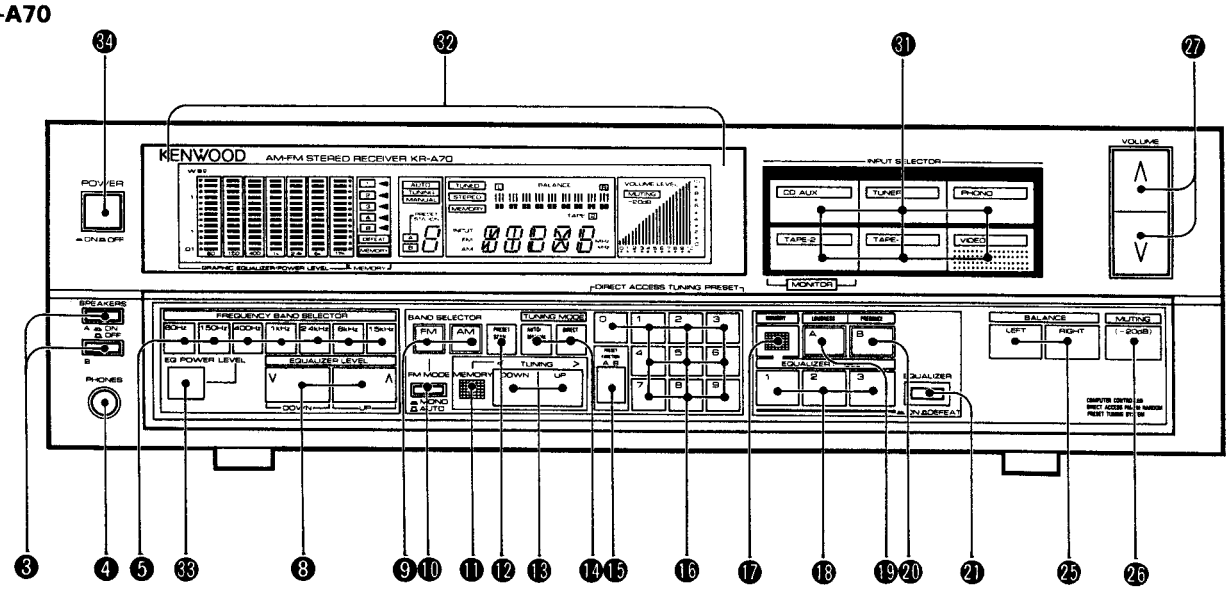
KVR-A90R



KVR-A70R



KR-A70



❶ REMOTE POWER switch (except KR-A70)
By pressing this switch with the MAIN POWER switch set to ON, the power of the unit and the power of the equipment connected to the SWITCHED AC outlet can be switched ON/OFF.
When this switch is pressed, the function selected last or the last station to be received will be displayed. You can operate the switch from a distance with the RC-90 (remote control unit).

❷ MAIN POWER switch (except KR-A70)
Press this switch to turn on main power. (The POWER STAND BY ㉔ indicator lights.) Press it again to turn main power off.

❸ SPEAKERS switch
A, B OFF — This position silences all speakers to permit private use of headphones.
A ON — Activates speakers connected to the SPEAKERS A terminals on the rear panel.
B ON — Activates speakers connected to the SPEAKERS B terminals on the rear panel.
A, B ON — Activates speakers connected to the SPEAKERS A and B terminals simultaneously.

❹ PHONES jack
Stereo headphones are plugged into this jack.

— The controls and switches ❺ — ❽ are for graphic equalizer section. —

❺ FREQUENCY BAND SELECTOR buttons
Use these buttons to select frequency bands when setting equalizer levels.
When one of these seven buttons is pressed, the display changes to graphic equalizer display, with the frequency display corresponding to the frequency band selected flashing, and equalizer level control is possible.

❻ EQ/ANALYZER button (except KVR-A70R and KR-A70)
EQ — When the button is set to this condition, the graphic equalizer level is displayed in the Display window ㉜ .
Analyzer — When the button is set to this condition, *"the music spectrum analyzer display"* is displayed in the display window, indicating the levels of the listening source.

❼ ANALYZER PEAK HOLD switch (except KVR-A70R and KR-A70)
When *"the music spectrum analyzer display"* window is displaying the spectrum analyzer display, pressing this switch to ON indicates the peak levels of the frequency bands of the signal output from the output terminals.

❽ EQUALIZER LEVEL controls
When one of the FREQUENCY BAND SELECTOR buttons is pressed and the frequency band display corresponding to the button pressed is flashing, these controls can be used to set the equalizer level. (The level can be varied in 13 stages, in 2 dB steps, between MAX +12 dB and MIN −12 dB.) The same operation is possible for any frequency band of the FREQUENCY BAND SELECTOR.

— The controls and switches ❾ — ⓰ are for tuner section. —

❾ BAND SELECTOR buttons
FM — For FM broadcasts (The FM indicator lights.)
AM — For AM broadcasts (The AM indicator lights.)

❿ FM MODE button
(⎍) AUTO — The unit switches automatically between stereo and monaural operation in accordance with the manner in which the selected station is operating. In addition, noise is silenced as you tune between stations.
(⎓) MONO — Provides monaural operation regardless of the manner of transmission.

⓫ TUNING MEMORY button
When the input mode is in tuner mode, use this button to store new frequencies in the preset channel memory. By pressing the TUNING MEMORY button, setting the PRESET FUNCTION button to A or B and by pressing one of the PRESET channel buttons, the frequency being received is stored in the memory in the PRESET channel button pressed.

⓬ PRESET SCAN button
Use this button for preset channel scanning.
When a frequency stored in the preset memory is being received, pressing this button shifts the reception to the next frequency stored in the preset memory. (The preset channels are scanned in the order A-0, A-1, ..., B-0, B-1, ..., B-9.)
When frequencies other than those stored in the preset memory received, pressing this button changes the reception to the frequency in preset channel A-0.

⓭ UP/DOWN TUNING buttons
Auto tuning mode — When the UP or DOWN button is pressed, the frequency automatically increases or decreases until the next station of sufficient signal strength is reached.
Manual tuning mode — Each time the UP or DOWN button is pressed, the tuned frequency increases or decreases in the following manner.
FM — 50 kHz (or 100 kHz) steps
AM — 9 kHz (or 10 kHz) steps
If either button is held down more than half a second, the tuned frequency will continue to increase or decrease until the button is released.

⓮ TUNING MODE buttons

AUTO/MANUAL button — Each press alternates auto tuning and manual tuning modes.

DIRECT button — Press this button while listening to a radio broadcast to set the unit to the direct tuning mode so that the frequency of the desired station can be entered with the numeric buttons.

⓯ PRESET FUNCTION button

Used to select A or B setting for the preset channel button. In either FM or AM mode, 20 stations can be preset as random as each setting (A or B) can contain 10 preset stations. Indicator A lights when A setting is used, and indicator B lights when B setting is used.

⓰ DIRECT ACCESS TUNING/PRESET (numeric) buttons

Use these buttons to:

1) input directly the digits of frequencies, or
2) store and recall frequencies in the preset memory.

— The controls and switches ⓱ — ㉒ are for graphic equalizer section. —

⓱ EQUALIZER PRESET MEMORY button

Press this button to store equalizer curves in memory. When this button is pressed with the display window in graphic equalizer mode, the MEMORY indicator lights and the "◄" on the sides of the display window's displays 1 to 3 flash, indicating that memory operation is possible.

During this condition, which lasts for approx. 5 seconds, pressing one of EQUALIZER PRESET buttons 1 to 3 stores the current equalizer curve in the memory of the button pressed.

⓲ EQUALIZER PRESET buttons

Use these buttons to store equalizer curves in memory or to recall them. (Three different equalizer curves can be stored.) In either case, when the display window mode has been set for *"the music spectrum analyzer display"*, the graphic equalizer display is displayed for approx. 5 seconds, then the display reverts to the previous spectrum analyzer display.

⓳ A LOUDNESS button

Press this button to recall the preset (fixed) equalizer curve (We call this LOUDNESS curve).

⓴ B PRESENCE button

Press this button to recall the preset (fixed) equalizer curve (We call this PRESENCE curve).

㉑ EQUALIZER switch

Turn this switch to ON and the frequency characteristic will be modified by passing through the graphic equalizer. In the DEFEAT position, the frequency characteristic remains unchanged.

The DEFEAT indicator in the display window lights when the switch is set to DEFEAT.

㉒ EQ REC switch (except KVR-A70R and KR-A70)

Press this switch and EQUALIZER switch to ON signals will allow equalized to be recorded on tape 2. If you wish to record non-equalized signals with the equalizer switch in the ON position, turn the equalizer recording switch to OFF. This will allow you to hear the equalized signals while recording non-equalized signals.

Note:

The equalized signal is not output at TAPE 1 jacks.

㉓ REMOTE SENSOR (except KR-A70)

Point the supplied remote control unit towards this sensor and operate.

㉔ POWER STAND BY indicator (except KR-A70)

Lights when the MAIN POWER switch is set to ON.

㉕ BALANCE controls

Governs the amount of sound coming from each paired speakers to get optimum stereo effect.

Pressing the RIGHT button will decrease the left channel volume and pressing the LEFT button will decrease the right channel volume. When the BALANCE controls is pressed, display window shows the BALANCE indicator.

㉖ MUTING button

When the muting button is pressed, the MUTING indicator in the display window will flash, and the overall listening sound level is reduced by 20 dB.

When the button is pressed again, you can restore exactly the same listening level as before.

㉗ VOLUME controls

This control adjusts the left- and right-channel volumes simultaneously. Set it for the desired listening level. Pressing the up (Λ) button increases the volume and pressing the down (V) button decreases it.

Note:

A slight noise is heard from the speakers when operating the VOLUME controls. This noise is the built-in microprocessor control signal and is not a fault.

㉘ VIDEO switch (except KR-A70)

To play a video recorder connected to the VCR A jacks, set the switch to A. To play back a video recorder connected to the VCR B jacks, set the switch to B.

㉙ SYNTHETIC STEREO switch (except KR-A70)

Press this switch to give the pseudo stereo effect to the monaural source connected to the VCR A and B jacks.

㉚ CARTRIDGE selector switch (except KVR-A70R and KR-A70)

This switch is used to select the type of cartridge of the turntable connected.

MM — When using an MM (moving magnet) and an high output MC (moving coil) cartridge, set the switch to this position.

MC — When using an MC cartridge set the switch to this position.

㉛ INPUT SELECTOR buttons

PHONO — Selects the program source played on the turntable.

TUNER — Selects the tuner mode.

CD/AUX — Selects the source connected to the CD/AUX jacks.

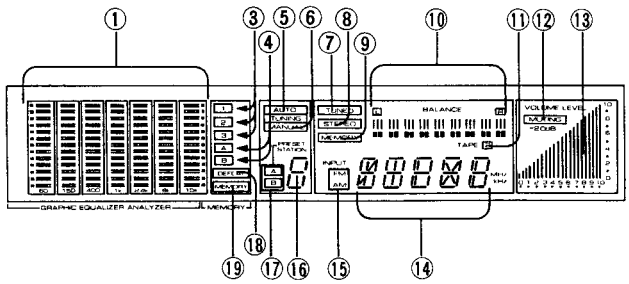
VIDEO — Selects the video recorders connected to the VCR jacks. (Use the VIDEO switch for selection between the VCR A jacks and VCR B jacks.)

TAPE 1 — Press this button to play back a tape deck connected to TAPE 1 jacks.

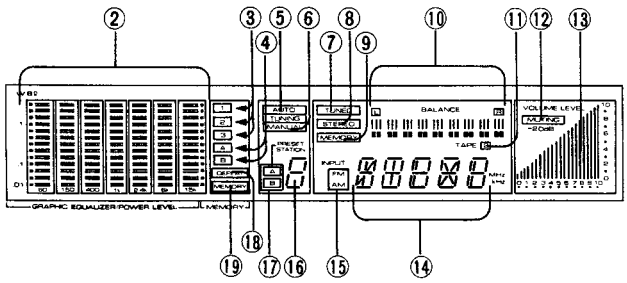
TAPE 2 — Press this button to play back a tape deck connected to the TAPE 2 jacks. (The TAPE-2 switch is operated in priority to any other audio input systems.)

㉜ Display window

KVR-A90R



KVR-A70R/KR-A70



① In graphic equalizer mode, displays the equalizer level display, the music spectrum analyzer display and peak hold display. **(KVR-A90R only)**

② In graphic equalizer mode, displays the equalizer level display and power level display. **(KVR-A70R and KR-A70)**

③ In graphic equalizer mode, displays the channel in which the equalizer curve is stored. Flashes when storing equalizer curves in memory.

④ Lights when the A LOUDNESS or B PRESENCE curve is selected.

⑤ In tuner mode, lights during auto tuning.

⑥ In tuner mode, lights during manual tuning.

⑦ In tuner mode, lights when a station is tuned in.

⑧ In tuner mode, lights when a stereo broadcast is tuned in.

⑨ In tuner mode, lights when a station is tuned in by memory selection.

⑩ Indicates the left and right volume balance.

⑪ Lights when the TAPE 2 of INPUT SELECTOR is pressed.

⑫ Flashes when the MUTING button is pressed.

⑬ Indicates the audio volume with level meters.

⑭ Displays the input mode display, digital frequency display and decibel displays.

⑮ Displays the tuner input mode. "FM" lights during FM broadcast reception and "AM" lights during AM reception.

⑯ Displays the preset channel.

⑰ "A" or "B" lights according to the selection of the PRESET FUNCTION buttons.

⑱ Lights when the EQUALIZER switch is set to "DEFEAT".

⑲ In graphic equalizer mode, lights when storing equalizer curves in memory.

㉝ EQ/POWER LEVEL button (except KVR-A90R)

EQ — When this button is set to this condition, the graphic equalizer level is displayed in the display window.

POWER LEVEL — When this button is set to this condition, the power level is displayed in the display window, the left channel power levels are displayed in the left 3 bars (60 Hz, 150 Hz, 400 Hz bands) and the right channel power levels are displayed in the right 3 bars (2.4 kHz, 6 kHz, 15 kHz bands). The bar of the 1 kHz band remains off.

㉞ POWER switch (KR-A70)

Press this switch to turn on power. Press it again to turn off power.

Operating instructions

Listening to AM/FM broadcasts

First set the MAIN POWER switch to ON, then the REMOTE POWER switch to ON. (With KR-A70, set the POWER switch to ON.) Press the TUNER button of the INPUT SELECTOR: "TUNER" and digital display are displayed in the display window. Next press the FM or AM button of the BAND SELECTOR. When FM is pressed, select also MONO or AUTO of the FM MODE buttons.

Auto tuning

1. Press the AUTO/MANUAL button to set to "AUTO".
2. Press the UP or DOWN TUNING button: The frequency will automatically increase or decrease until a station with sufficient signal level is received. To stop the frequency scanning before a station is received, press the AUTO/MANUAL button to set to "MANUAL".
3. Adjust the VOLUME controls as preferred.

Manual tuning

1. Press the AUTO/MANUAL button to set to "MANUAL".
2. Press the UP/DOWN TUNING buttons to tune in the desired station.
   To continuously increase or decrease frequencies, hold the button depressed.
3. Adjust the VOLUME controls for your preference.

Direct tuning

1. Press the DIRECT button.
2. Enter the desired frequency using the numeric keys.
3. Adjust the VOLUME controls for your preference.

Presetting broadcast stations

A total of 20 AM and FM stations can be preset.

1. Select the desired station with either auto tuning, manual tuning or direct tuning.
2. Press the TUNING MEMORY button. (The MEMORY indicator flashes.)
3. Press the PRESET FUNCTION button to select "A" or "B".
4. Press one of the numeric keys: The frequency being tuned in is stored in the memory of the digit key.

Notes:

1. If the frequency which is received by direct tuning method is out of the receivable range, the frequency display flashes and presetting is not possible.
2. When the channel spaces of FM and AM are 50 kHz and 9 kHz respectively, presetting the frequency in other than 50 kHz and 9 kHz steps stores the stations of the nearest lower 50 kHz and 9 kHz step frequencies.

   Example

   (FM) 98.54 MHz → 98.50 MHz
   98.57 MHz → 98.55 MHz

   (AM) 533 kHz → 531 kHz
   1000 kHz → 999 kHz

Listening to a preset station

1. Press the TUNER button of the INPUT SELECTOR.
2. Press the PRESET FUNCTION button to select "A" or "B".
3. Press a numeric key under which memory has been preset.
4. Adjust the VOLUME controls as preferred.

Record playing

1. Press the PHONO INPUT SELECTOR button.
2. According to the type of phono-cartridge used, set the CARTRIDGE selector switch (except KVR-A70R and KR-A70) to appropriate position.
3. Operate the turntable to play back a record.
4. Adjust the VOLUME controls for your preference.

Listening to the program source connected to the CD/AUX jacks

1. Press the CD/AUX INPUT SELECTOR button.
2. Operate the component connected to the CD/AUX jacks.
3. Adjust the VOLUME controls for your preference.

Tape decks

Tape playback

1. Press the appropriate TAPE INPUT SELECTOR button (1 or 2) to select output from a tape deck connected to the TAPE 1 or 2 jacks.
2. Operate the tape deck.
3. Adjust the VOLUME controls to your preference.

Note:

When both buttons (TAPE-1 and TAPE-2) are pressed, TAPE-2 setting has priority.

Recording

1. Press the appropriate INPUT SELECTOR buttons.
2. Set up your tape deck(s) for recording and set the recording level with the controls on your tape deck(s).
3. Adjust listening level at the unit to suit your listening preference.

Tape dubbing

Tape recordings may be duplicated (dubbed) easily using two tape decks connected to the TAPE 1 and 2 jacks. Tape dubbing is possible from the tape deck connected to the TAPE 1 jacks to deck connected to the TAPE 2 jacks.

1. Connect two tape decks to the TAPE 1 and TAPE 2 jacks.
2. Press the TAPE 1 INPUT SELECTOR button.
3. Play back the recorded tape and adjust the recording levels before starting tape dubbing.

Note

Adjust record levels on the deck that is making the copy using that deck's operating controls.

Listening to video recorder audio sound (with KVR-A90R/ KVR-A70R)

1. Press the VIDEO button of the INPUT SELECTOR.
2. Press the VIDEO button to select wither of the outputs from video recorders connected to the VCR A and VCR B jacks.
3. Operate the video recorder.
4. Adjust the VOLUME controls for your preference.
5. When a video monitor is connected to the MONITOR OUT jack on the rear panel, the picture from the recorder can also be monitored.

Note

When connecting a monaural video recorder, connect it to the VCR A jack and set the MONO/STEREO switch to "MONO".

To monitor video recorder audio with the KR-A70

1. Press the VIDEO button of the INPUT SELECTOR to select the output from a video recorder connected to the VCR AUDIO jacks.
2. Operate the video recorder.
3. Adjust the VOLUME controls for your preference.

Dubbing between two video recorders (except KR-A70)

The program source selected by the INPUT SELECTOR (heard from the speakers) can be recorded in the audio track of the video tape.

When dubbing from a program source other than VCR, setting the EQUALIZER switch to ON enables recording of the equalized sound (except when EQ REC switch is set to ON during dubbing from TAPE 2 to VCR (A, B) ..... KVR-A90R).

When dubbing from VCR, the SYNTHETIC STEREO switch and EQUALIZER switch can be operated.

Synthetic stereo effect (except KR-A70)

When the video recorder connected to the VCR A or VCR B jacks is monaural, a simulated stereo effect can be provided for the audio sound.

Play back the video recorder and set the SYNTHETIC STEREO switch to "ON". The sound with the synthetic stereo effect can be recorded onto an audio tape deck.

Graphic equalizer operation

For equalizer level setting, refer to "EQUALIZER LEVEL controls" on page 11. For presetting equalizer curves, refer to "EQUALIZER PRESET MEMORY button" on page 12. Three desired equalizer curves can be preset in addition to the LOUDNESS curve (a curve with loudness effect in which high and low frequencies are enhanced, preset under the A LOUDNESS button) and the PRESENCE curve (mid-range frequencies are enhanced for vivid reproduction of vocals, preset in the B PRESENCE button).

Listening to sound provided with equalizer effect

1. Press one of the EQUALIZER PRESET buttons, A LOUDNESS button or B PRESENCE button, so that the graphic equalizer display is displayed in the display window.
2. Press the desired INPUT SELECTOR button.
3. Set the EQUALIZER switch to "ON".
4. Play the source selected with the INPUT SELECTOR. Vary the equalizer level of each displayed frequency using the FREQUENCY BAND SELECTOR buttons and EQUALIZER LEVEL controls.
5. When the VIDEO button has been selected with the INPUT SELECTOR and the input is monaural, setting the SYNTHETIC STEREO switch to "ON" allows listening to sound provided with both the equalizer and synthetic stereo effects (except for KR-A70).

Recording sound provided with equalizer effect (except KVR-A70R and KR-A70)

1. Connect a tape deck to the TAPE 2 jacks.
2. Press one of the EQUALIZER PRESET buttons, LOUDNESS A button or PRESENCE B button, so that the graphic equalizer display is displayed in the display window.
3. Press the INPUT SELECTOR button of the source you want to record.
4. Set the EQUALIZER switch to "ON".
5. Set the EQ REC switch to "ON".
6. Play the source to be recorded. Vary the equalizer level of each displayed frequency using the FREQUENCY BAND SELECTOR buttons and EQUALIZER LEVEL controls.
7. Set the tape deck to REC STAND BY mode and adjust the recording level.
8. Set the tape deck to REC mode: the equalized sound will be recorded.
9. When the VIDEO button has been selected with the INPUT SELECTOR and the input is monaural, setting the SYNTHETIC STEREO switch to "ON" allows recording sound provided with both the equalizer and synthetic stereo effects.

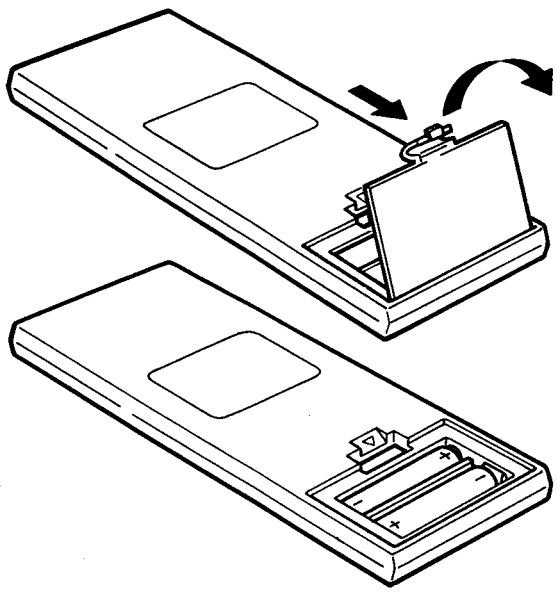
Operating procedure of the remote control unit (Except KR-A70)

Battery

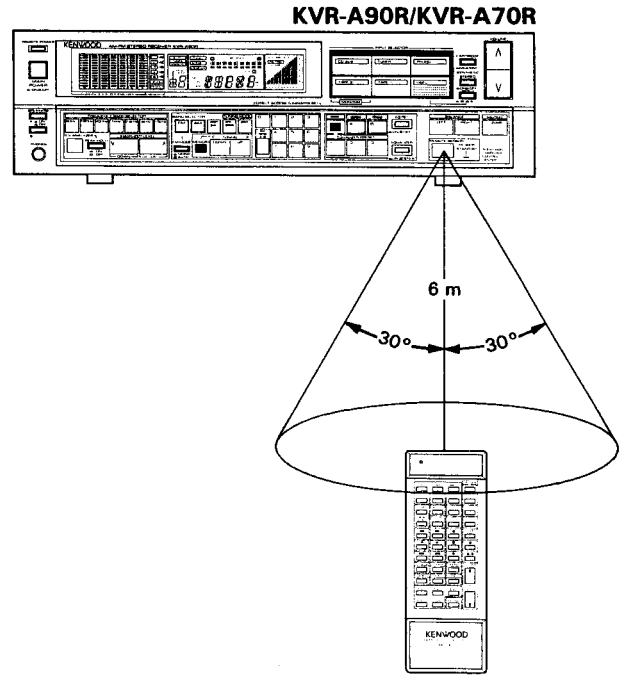
Load the supplied 2 AAA, R03 batteries as shown below.

1. Open the battery compartment lid.
2. Load the batteries, observing the polarities.

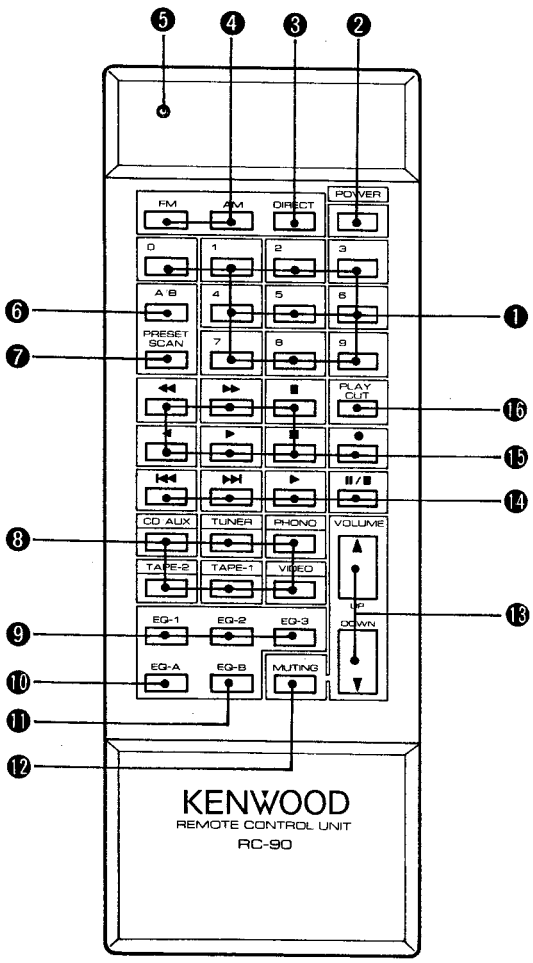
When the operation indicator of the remote control unit does not light even when a button is pressed, the batteries may be exhausted. Replace with new batteries.



Remote control unit operation range



REMOTE CONTROL UNIT: Controls, indicators and their functions



❶ **Direct access tuning/preset buttons**
The same function as the DIRECT ACCESS TUNING/PRESET buttons ⑯ on the main unit front panel.

❷ **POWER switch**
The same function as the REMOTE switch ❶ on the main unit front panel.

❸ **DIRECT button**
The same function as the TUNING MODE DIRECT button ⑭ on the main unit front panel.

❹ **FM/AM select buttons**
The same function as the BAND SELECTOR buttons ❾ on the main unit front panel.

❺ **Opration indicator**
Flashes when a button is pressed on the remote control unit.

❻ **A/B select button**
The same function as the PRESET FUNCTION button ⑮ on the main unit front panel.

❼ **PRESET SCAN button**
The same function as the PRESET SCAN button ⑫ on the main unit front panel.

❽ **Input selector buttons**
The same function as the INPUT SELECTOR buttons ㉑ on the main unit front panel.

❾ **Equalizer preset buttons**
The same function as the EQUALIZER PRESET button ⑱ on the main unit front panel.

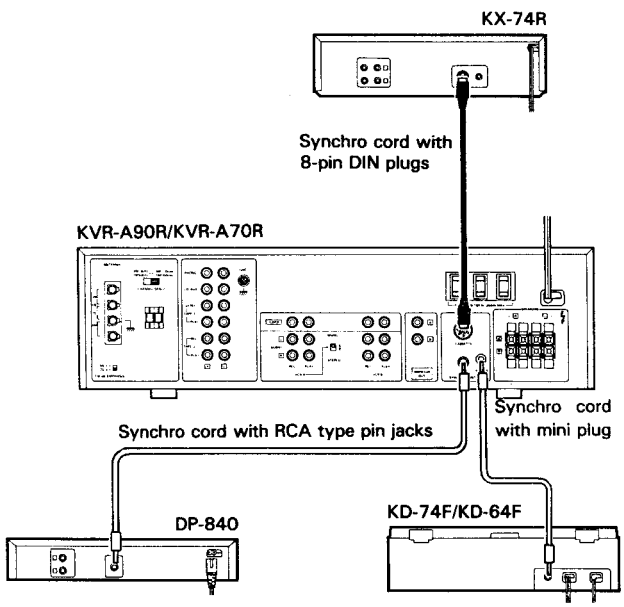
❿ **EQ-A button**
The same function as the A LOUDNESS button ⑲ on the main unit front panel.

⓫ EQ-B button
The same function as the B PRESENCE button ⓴ on the main unit front panel.

⓬ MUTING button
The same function as the MUTING button ㉖ on the main unit front panel.

⓭ VOLUME controls
The same function as the VOLUME controls ㉗ on the main unit front panel.

Buttons ⓮ , ⓯ , ⓰ are used for remote control of the DP-840 (CD player), KX-74R (tape deck) and KD-74F/KD-64F (turntable) connected with synchro connections to the main unit (in addition to connections using ordinary audio cables). For details, refer to the instructions provided with each unit.



Method of synchro connection

⓮ DP-840 (CD player) remote control buttons

- **Backward search button/backward button (⏮)**
  When this button is pressed during play, the DP-840 returns to the beginning of the current selection. Each time the button is pressed, the DP-840 skips the selections backward. When this button is pressed while pressing the play switch (►), the DP-840 returns to the previous selections.
- **Forward search button/fast forward button (⏭)**
  When this button is pressed during play, the DP-840 goes to the beginning of the next selection. Each time the button is pressed, the DP-840 skips the selections forward. When this button is pressed while pressing the play switch (►), the DP-840 goes to the following selections.
- **Play switch (►)**
  Press to enter the play mode.
- **Pause button (⏸ / ■)**
  When this button is pressed during playback, the pause indicator lights and the DP-840 enters the pause mode.
  To resume playback, press the play switch (►). When the pause button is pressed twice, the laser pick-up returns to the beginning of the disc and the DP-840 stops.

⓯ KX-74R (tape deck) remote control buttons

- **Fast reverse button (◄◄)**
  Press to rewind tape. Tape will move from the right reel to the left reel at high speed. When this button is pressed during playback, tunes are skipped in the reverse direction each time the button is pressed.
- **Fast forward button (►►)**
  Press to rapidly advance the tape. When this button is pressed during playback, tunes are skipped in the forward direction each time the button is pressed.
- **Stop button (■)**
  Press to stop tape travel. This will also release the previous mode of operation.
- **Reverse play button (◄)**
  Press to play the tape in the reverse direction (side B).
- **Forward play button (►)**
  Press to play the tape in the forward direction (side A).
- **PAUSE button (⏸)**
  When this button is pressed during recording, the recording stops temporarily. The indicator lights. To resume recording, press the REC/button.
- **REC button (●)**
  Press this button to start recording. The indicator lights. It is not necessary to press the forward play (►) or reverse play (◄) button. The recording mode can only be entered from the stop mode. The recording direction is indicated by the direction indicators (◁ ▷). To change the recording direction, press the forward play (►) or reverse play (◄) button, press the stop button (■), then press this button. When this button is pressed once, the unit enters the recording mode and recording starts.

⓰ KD-74F/KD-64F (turntable) remote control button

- **PLAY/CUT button**
  When the turntable power is ON, press this button for play/cut operation.

In case of difficulty

If your unit should not perform as expected, consult the table below to see if the problem can be corrected before seeking help from your dealer or service representative.

Symptom	Cause	Remedy
No power, no sound.	1. Power cord not plugged in. 2. Poor connection at wall outlet. Power outlet inactive.	1. Check plug contact. 2. Check outlet using a lamp or other appliance (outlet may be controlled by a wall switch).
No sound from left and right.	1. Speaker cords disconnected. 2. Speakers switched off.	1. Check speaker connections. 2. Check speaker switch.
Sound from left or right, but not both.	1. Poor speaker connections. 2. Defective speaker.	1. Check connections at both ends of speaker cord. 2. Reverse speakers. If problem stays with speaker, have speaker checked.
Occurs during AM reception only	**Cause**	**Remedy**
High-frequency whistle especially at night.	Interference from TV set.	Turn off TV set, if problem disappears try relocating TV set.
Intermittent buzz or cracking sound.	Lightning. Fluorescent lamps starting. Appliance or furnance starting.	No remedy. Try reversing AC plug. Try reversing AC plug.
Occurs during FM reception only	**Cause**	**Remedy**
Hiss that gets worse in stereo reception.	Very weak antenna input signal.	Consider an outdoor antenna installation. In areas remote from the transmitter a 5 to 8 element antenna designed exclusively for FM is suggested.
Rhythmic static or popping noises.	Automobile ignition noise, especially evident when receiving weak signals.	Review antenna installation. Site the antena as far from the street as possible and use coaxial cable.
STEREO indicator fails to light during stereo broadcast.	Another possible effect of a very weak signal.	Antenna system needs attention (see above).

Specifications

KVR-A90R

Audio Section (IHF '66)

Power Output

70 watts per channel minimum RMS, both channel driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.007% total harmonic distortion

80 watts per channel minimum RMS, both channel driven at 8 ohms from 40 Hz to 20,000 Hz with no more than 0.03% total harmonic distortion

80 watts per channel minimum RMS, both channel driven into 8 ohms at 1 kHz with no more than 0.007% total harmonic distortion

Total Harmonic Distortion
- **(20 Hz - 20,000 Hz, 8 ohms)** ..... 0.007% at 70 watts
- **(1 kHz, 8 ohms)** ..... 0.002% at 70 watts

Inter Modulation Distortion .... 0.007% at 70 watts

Input Sensitivity/Impedance
- **PHONO (MM)** ..... 2.5 mV/47 kohms
- **PHONO (MC)** ..... 0.2 mV/100 ohms
- **CD/AUX, TAPE, VIDEO** ..... 150 mV/47 kohms

Frequency Response
- **PHONO (RIAA Standard Curve)** ..... 20 Hz - 20,000 Hz... ±0.5 dB
- **TAPE, CD/AUX** ..... 10 Hz - 100,000 Hz... +0, −3 dB

Signal to Noise Ratio
- **PHONO (MM)** ..... 85 dB
- **PHONO (MC)** ..... 65 dB
- **CD/AUX, TAPE, VIDEO** ..... 100 dB

Graphic Equalizer
- **Center Frequency** ..... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
- **Control Range** ..... ±12 dB

Video Section

Inputs **VIDEO 1, 2** ..... 1 Vp-p, 75 ohms unbalanced

Outputs
- **VIDEO 1, 2** ..... 1 Vp-p, 75 ohms unbalanced
- **MONITOR VIDEO OUT** .... 1 Vp-p, 75 ohms unbalanced

FM Tuner Section

Tuning Frequency Range.....87.5 MHz - 108 MHz
Antenna Impedance.....300 ohms balanced & 75 ohms unbalanced
Usable Sensitivity.....10.8 dBf (1.9 μV)
50 dB Quieting Sensitivity
MONO.....14.2 dBf (2.8 μV)
STEREO.....36.8 dBf (38 μV)
Signal to Noise Ratio at 65 dBf
MONO.....80 dB
STEREO.....72 dB
Total Harmonic Distortion at 1,000 Hz
MONO.....0.07%
STEREO.....0.1%
Frequency Response.....30 Hz - 15,000 Hz +0.5, −2 dB
Stereo Separation.....50 dB at 1,000 Hz
Selectivity.....55 dB at 400 kHz
Capture Ratio.....1.0 dB
Image Rejection Ratio.....38 dB
IF Rejection Ratio.....80 dB
Spurious Rejection Ratio.....75 dB
AM Suppression Ratio.....72 dB

AM Tuner Section

Tuning Range
530 kHz - 1,610 kHz (with the AM tuning interval set at 10 kHz)
531 kHz - 1,602 kHz (with the AM tuning interval set at 9 kHz)
Usable Sensitivity.....10 μV (400 μV/m)
Signal to Noise Ratio.....50 dB
Total Harmonic Distortion.....0.3%
Selectivity.....25 dB

General

Power Requirement.....60 Hz, 120 V...USA Model
50/60 Hz, 110 - 120/220 - 240 V...Others
Power Consumption.....3.2 A...USA Model/250 W...Others
AC Outlet.....Switched × 3 (200W)
Dimensions (W × H × D).....420 × 128.5 × 321 mm
16-9/16″ × 5-1/6″ × 12-5/8″
Weight.....Net 9.0 kg (19.8 lb)

KVR-A70R (Except European model)

Audio Section (IHF '66)

Power Output

55 watts per channel minimum RMS, both channel driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion

60 watts per channel minimum RMS, both channel driven at 8 ohms from 40 Hz to 20,000 Hz with no more than 0.03% total harmonic distortion
63 watts per channel minimum RMS, both channel driven into 8 ohms at 1 kHz with no more than 0.008% total harmonic distortion

Total Harmonic Distortion
(20 Hz - 20,000 Hz, 8 ohms).....0.008% at 55 watts
(1 kHz, 8 ohms).....0.002% at 55 watts
Inter Modulation Distortion....0.008% at 55 watts
Input Sensitivity/Impedance
PHONO (MM).....2.5 mV/47 kohms
CD/AUX, TAPE, VIDEO.....150 mV/47 kohms
Frequency Response
PHONO (RIAA Standard Curve).....20 Hz - 20,000 Hz... ±0.5 dB
TAPE, CD/AUX.....10 Hz - 200,000 Hz... +0, −3 dB
Signal to Noise Ratio
PHONO (MM).....73 dB
CD/AUX, TAPE, VIDEO.....100 dB
Graphic Equalizer
Center Frequency.....60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
Control Range.....±12 dB

Video Section

Inputs VIDEO 1, 2.....1 Vp-p, 75 ohms unbalanced
Outputs
VIDEO 1, 2.....1 Vp-p, 75 ohms unbalanced
MONITOR VIDEO OUT....1 Vp-p, 75 ohms unbalanced

FM Tuner Section

Tuning Frequency Range.....87.5 MHz - 108 MHz
Antenna Impedance.....300 ohms balanced & 75 ohms unbalanced
Usable Sensitivity.....10.8 dBf (1.9 μV)
50 dB Quieting Sensitivity
MONO.....14.2 dBf (2.8 μV)
STEREO.....36.8 dBf (38 μV)
Signal to Noise Ratio at 65 dBf
MONO.....80 dB
STEREO.....72 dB
Total Harmonic Distortion at 1,000 Hz
MONO.....0.07%
STEREO.....0.1%
Frequency Response.....30 Hz - 15,000 Hz +0.5, −2 dB
Stereo Separation.....50 dB at 1,000 Hz
Selectivity.....60 dB at 400 kHz
Capture Ratio.....1.0 dB
Image Rejection Ratio.....38 dB
IF Rejection Ratio.....80 dB
Spurious Rejection Ratio.....75 dB
AM Suppression Ratio.....72 dB

AM Tuner Section

Tuning Range
530 kHz - 1,610 kHz (with the AM tuning interval set at 10 kHz)
Usable Sensitivity.....10 μV (400 μV/m)
Signal to Noise Ratio.....50 dB
Total Harmonic Distortion.....0.3%
Selectivity.....25 dB

General

Power Requirement.....60 Hz, 120 V...USA & Canada Models
Power Consumption.....3.0A...USA & Canada Models
AC Outlet.....Switched × 3 (200W)
Dimensions (W × H × D).....420 × 128.5 × 321 mm
16-9/16″ × 5-1/6″ × 12-5/8″
Weight.....Net 8.4 kg (18.5 lb)

Audio Section (IHF '66)

Power Output

55 watts per channel minimum RMS, both channel driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion

60 watts per channel minimum RMS, both channel driven at 8 ohms from 40 Hz to 20,000 Hz with no more than 0.03% total harmonic distortion

63 watts per channel minimum RMS, both channel driven into 8 ohms at 1 kHz with no more than 0.008% total harmonic distortion

Total Harmonic Distortion
- **(20 Hz - 20,000 Hz, 8 ohms)** ..... 0.008% at 55 watts
- **(1 kHz, 8 ohms)** ..... 0.002% at 55 watts

Inter Modulation Distortion .... 0.008% at 55 watts

Input Sensitivity/Impedance
- **PHONO (MM)** ..... 2.5 mV/47 kohms
- **CD/AUX, TAPE, VIDEO** ..... 150 mV/47 kohms

Frequency Response
- **PHONO (RIAA Standard Curve)** ..... 20 Hz - 20,000 Hz... ±0.5 dB
- **TAPE, CD/AUX** ..... 10 Hz - 200,000 Hz... +0, −3 dB

Signal to Noise Ratio
- **PHONO (MM)** ..... 73 dB
- **CD/AUX, TAPE, VIDEO** ..... 100 dB

Graphic Equalizer
- **Center Frequency** ..... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
- **Control Range** ..... ±12 dB

FM Tuner Section

Tuning Frequency Range ..... 87.5 MHz - 108 MHz
Antenna Impedance ..... 300 ohms balanced & 75 ohms unbalanced
Usable Sensitivity ..... 10.8 dBf (1.9 μV)
50 dB Quieting Sensitivity
- **MONO** ..... 14.2 dBf (2.8 μV)
- **STEREO** ..... 36.8 dBf (38 μV)

Signal to Noise Ratio at 65 dBf
- **MONO** ..... 80 dB
- **STEREO** ..... 72 dB

Total Harmonic Distortion at 1,000 Hz
- **MONO** 0.07%
- **STEREO** 0.1%

Frequency Response ..... 30 Hz - 15,000 Hz +0.5, −2 dB
Stereo Separation ..... 50 dB at 1,000 Hz
Selectivity ..... 55 dB at 400 kHz
Capture Ratio ..... 1.5 dB
Image Rejection Ratio ..... 38 dB
IF Rejection Ratio ..... 80 dB
Spurious Rejection Ratio ..... 75 dB
AM Suppression Ratio ..... 72 dB

AM Tuner Section

Tuning Range
- **530 kHz - 1,610 kHz (with the AM tuning interval set at 10 kHz)**
- **531 kHz - 1,602 kHz (with the AM tuning interval set at 9 kHz)**

Usable Sensitivity ..... 10 μV (400 μV/m)
Signal to Noise Ratio ..... 50 dB
Total Harmonic Distortion 0.3%
Selectivity ..... 25 dB

General

Power Requirement ..... 60 Hz, 120 V...USA & Canada Models
50/60 Hz, 110 - 120/220 - 240 V...Others
Power Consumption ..... 3.0 A...USA & Canada Models/200 W...Others
AC Outlet ..... Switched × 2, Unswitched × 1 (200W)
Dimensions (W × H × D) ..... 420 × 128.5 × 321 mm
16-9/16″ × 5-1/6″ × 12-5/8″
Weight ..... Net 8.2 kg (18.1 lb)

KENWOOD